SEQUENCE LISTING

<110> Crow, Mary K.

<120> MARKERS FOR DISEASE SUSCEPTIBILITY AND TARGETS FOR THERAPY

<130> 5983/2H567

<140> to be added
<141> 2001-12-19

<150> 60/256,673
<151> 2000-12-19

<160> 15

<170> PatentIn version 3.1

<210> 1
<211> 6539
<212> DNA
<213> Homo sapiens

<300>
<308> GenBank Accession No. U09116
<309> 1995-02-02
<313> (1)..(6539)

<400> 1
gaataggaac agctccggtc tacagctccc agcgtgagcg acgcagaaga cggtgatttc 60

tgcatttcca tctgaggtac cgggttcatc tcactaggga gtgccagaca gtgggcgcag 120

gccagtgtgt gtgcgcaccg tgcgcgagcc gaagcagggc gaggcattgc ctcacctggg 180

aagcgcaagg ggtcagggag ttccctttcc gagtcaaaga aaggggtgat ggacgcacct 240

ggaaaatcgg gtcactccca cccgaatatt gcgcttttca gaccggctta agaaacggcg 300

caccacgaga ctatatccca cacctggctc agagggtcct acgcccacgg aatctcgctg 360

attgctagca cagcagtctg agatcaaact gcaaggcggc aacgaggctg ggggaggggc 420

gcccgccatt gcccaggctt gcttaggtaa acaaagcagc cgggaagctc gaactgggtg 480

gagcccacca cagctcaagg aggcctgcct gcctctgtag gctccacctc tgggggcagg 540

gcacagacaa acaaaaaggc agcagtaacc tctgcagact taagtgtccc tgtctgacag 600

ctttgaagag agcagtggtt ctcccagcac gcagctggag atctgagaac gggcagactg 660

cctcctcaag tgggtccctg acccctgacc cccgagcagc ctaactggga ggcacccccc 720

agcaggggca cactgacacc tcacacggca gggtattcca acagacctgc agctgagggt 780

cctgtctgtt agaaggaaaa ctaacaacca gaaaggacat ctacaccgaa aacccatctg 840

tacatcacca tcatcaaaga ccaaaagtag ataaaaccac aaagatgggg aaaaaacaga 900

acagaaaaac tggaaactct aaaacgcaga gcgcctctcc tcctccaaag gaacgcagtt 960

cctcaccagc aacagaacaa agctggatgg agaatgattt tgacgagctg agagaagaag 1020

gcttcagacg atcaaattac tctgagctac gggaggacat tcaaaccaaa ggcaaagaag 1080

ttgaaaactt tgaaaaaaat ttagaagaat gtataactag aataaccaat acagagaagt 1140

gcttaaagga gctgatggag ctgaaaacca aggctcgaga actacgtgaa gaatgcagaa 1200

gcctcaggag ccgatgcgat caactggaag aaagggtatc agcaatggaa gatgaaatga 1260

atgaaatgaa gcgagaaggg aagtttagag aaaaaagaat aaaaagaaat gagcaaagcc 1320

tccaagaaat atgggactat gtgaaaagac caaatctacg tctgattggt gtacctgaaa 1380

gtgatgtgga gaatggaacc aagttggaaa acactctgca ggatattatc caggagaact 1440

tcccaatct agcaaggcag gccaacgttc agattcagga aatacagaga acgccacaaa 1500

gatactcctc gagaagagca actccaagac acataattgt cagattcacc aaagttgaaa 1560

tgaaggaaaa aatgttaagg gcagccagag agaaaggtcg ggttaccctc aaagggaagc 1620

ctatcagact aacagcagat ctctcggcag aaaccctaca agccagaaga gagtgggggc 1680

caatattcaa cattcttaaa gaaaagaatt ttcaacccag aatttcattt ccagccaaac 1740

taagcttcat aagtgaagga gaaagaaaat actttacaga caagcaaatg ctgagagatt 1800

ttgtcaccac caggcctacc ctaaaagagc tcctgaagga agcactaaac atggaaagga 1860

acaaccggta ccagccgctg caaaatcatg ccaaaatgta aagaccatcg agactaggaa 1920

gaaactgcat caactaatga gcaaaatcac cagctaacat cataatgaca ggatcaaatt 1980

cacacataac aatattaact ttaaatataa atggactaaa ttctgcaatt aaaagacaca 2040

gactggcaag ttggataaag agtcaagacc catcagtgtg ctgtattcag gaaacccatc 2100

tcatgtgcag agacacacat aggctcaaaa taaaaggatg gaggaagatc taccaagcaa 2160

atggaaaaca aaaaaaggca ggggttgcaa tcctagtctc tgataaaaca gactttaaac 2220

caacaaagat caaaagagac aaagaaggcc attacataat ggtaaaggga tcaattcaac 2280

aagaggagct aactatccta aatatttatg cacccaatac aggagcaccc agattcataa 2340

agcaagtcct gagtgaccta caaagagact tagactccca cacattaata atgggagact 2400

ttaacacccc actgtcaata ttagacagat caacgagaca gaaagtcaac aaggataccc 2460

aggaattgaa ctcagctctg caccaagcag acctaataga catctacaga actctccacc 2520

ccaaatcaac agaatataca ttttttttcag caccacacca cacctattcc aaaatcgacc 2580

acatagttgg aagtaaagct ctcctcagca aatgtaaaag aacagaaatt ataacaaact 2640

atctctcaga ccacagtgca atcaaactag aactcaggat taagaatctc actcaaagcc 2700

gctcaactac atggaaactg aacaacctgc tcctgaatga ctactgggta cataacgaaa 2760

tgaaggcaga aataaagatg ttctttgaaa ccaacgagaa caaagacacc acataccaga 2820

atctctggga cgcattcaaa gcagtgtgta gagggaaatt tatagcacta aatgcctaca 2880

agagaaagca ggaaagatcc aaaattgaca ccctaacatc acaattaaaa gaactagaaa 2940

agcaagagca aacacattca aaagctagca gaaggcaaga aataactaaa atcagagcag 3000

aactgaagga aatagagaca caaaaaaccc ttcaaaaaat caatgaatcc aggagctggt 3060

tttttgaaag gatcaacaaa attgatagac cgctagcaag actaataaag aaaaaaagag 3120

agaagaatca aatagacaca ataaaaaatg ataaagggga tatcaccacc gatcccacag 3180

aaatacaaac taccatcaga gaatactaca aacacctcta cgcaaataaa ctagaaaatc 3240

tagaagaaat ggatacattc ctcgacacat acactctccc aagactaaaa caggaagaag 3300

ttgaatctct gaatggacca ataacaggct ctgaaattgt ggcaataatc aatagtttac 3360

caaccaaaaa gagtccagga ccagatggat tcacagccga attctaccag aggtacaagg 3420

aggaactggt accattcctt ctgaaactat tccaatcaat agaaaaagag ggaatcctcc 3480

ctaactcatt ttatgaggcc agcatcattc tgataccaaa gccgggcaga gacacaacca 3540

aaaaagagaa ttttagacca atatccttga tgaacattga tgcaaaaatc ctcaataaaa 3600

tactggcaaa ccgaatccag cagcacatca aaaagcttat ccaccatgat caagtgggct 3660

tcatccctgg gatgcaaggc tggttcaata tacgcaaatc aataaatgta atccagcata 3720

taaacagagc caaagacaaa aaccacatga ttatctcaat agatgcagaa aaagcctttg 3780

acaaaattca acaacccttc atgctaaaaa ctctcaataa attaggtatt gatgggacgt 3840

atttcaaaat aataagagct atctatgaca aacccacagc caatatcata ctgaatgggc 3900

aaaaactgga agcattccct ttgaaaactg gcacaagaca gggatgccct ctctcaccgc 3960

tcctattcaa catagtgttg gaagttctgg ccagggcaat caggcaggag aaggaaataa 4020

agggtattca attaggaaaa gaggaagtca aattgtccct gtttgcagac gacatgattg 4080

tctatctaga aaaccccatt gtctcagccc aaaatctcct taagctgata agcaacttca 4140

gcaaagtctc aggatacaaa atcaatgtac aaaaatcaca agcattctta tacaccaaca 4200

atcagacaaac agagagccaa atcatgggtg aactcccatt cacaattgct tcaaagagga 4260

taaaatacct aggaatccaa cttacaaggg atgtgaagga cctcttcaag gagaactaca 4320

aaccactgct caaggaaata aaagaggaca caaacaaatg gaagaacatt ccatgctcat 4380

gggtaggaag aatcaatatc gtgaaaatgg ccatactgcc caaggtaatt tacagattca 4440

atgccatccc catcaagcta ccaatgactt tcttcacaga attggaaaaa actactttaa 4500

agttcatatg gaaccaaaaa agagcccgca ttgccaagtc aatcctaagc caaaagaaca 4560

aagctggagg catcacacta ccttacttca aactatacta caaggctaca gtaaccaaaa 4620

cagcatggta ctggtaccaa aacagagata tagatcaatg gaacagaaca gagccctcag 4680

aaataatgcc acatatctac aactatctga tctttgacaa acctgagaaa aacaagcaat 4740

ggggaaagga ttccctattt aataaatggt gctgggaaaa ctggctagcc atatgtagaa 4800

agctgaaact ggatctcttc cttacacctt atacaaaaat caattcaaga tggattaaag 4860

atttaaacgt taaacctaaa accataaaaa ccctagaaga aaacctaggc attaccattc 4920

aggacatagg cgtgggcaag gacttcatgt ccaaaacacc aaaagcaatg gcaacaaaag 4980

acaaaattga caaatgggat ctaattaaac taaagagctt ctgcacagca aaagaaacta 5040

ccatcagagt gaacaggcaa cctacaacat gggagaaaat tttcgcaacc tactcatctg 5100

acaaagggct aatatccaga atctacaatg aactcaaaca aatttacaag aaaaaaacaa 5160

acaaccccat caaaaagtgg gcgaaggaca tgaacagaca cttctcaaaa gaagacattt 5220

atgcagccaa aaaacacatg aagaaatgct catcatcact ggccatcaga gaaatgcaaa 5280

tcaaaaccac tatgagatat catctcacac cagttagaat ggcaatcatt aaaaagtcag 5340

gaaacaacag gtgctggaga ggatgcggag aaataggaac acttttacac tgttggtggg 5400

actgtaaact agttcaacca ttgtggaagt cagtgtggcg attcctcagg gatctagaac 5460

tagaaatacc atttgaccca gccatcccat tactgggtat atacccagag gactataaat 5520

catgctgcta taaagacaca tgcactcgta tgtttattgc ggcactattc acaatagcaa 5580

aaacttggaa ccaacccaaa tgtccaacaa tgatagactg gattaagaaa atgtggcaca 5640

tatacaccat ggaatattat gcagccataa aaaatgatga gttcatatcc tttgtaggga 5700

catggatgaa attggaaacc atcattctca gtaaactatc gcaagaacaa aaaaccaaac 5760

accgcatatt ctcactcata ggtgggaatt gaacaatgag atcacatgga cacaggaagg 5820

ggaatatcac actctgggga ctgtggtggg gtcgggggag gggggagggg tagcattggg 5880

agatatacct aatgctagat gacacattag tgggtgcagc gcaccagcat ggcacatgta 5940

tacatatgta actaacctgc acaatgtgca catgtaccct aaaacttaga gtataattaa 6000

aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaagatca caccactgca ctccagcctg 6060

ggtgtcaaag cgagaccctg tctcaggaaa aaaaaaaaaa aaaaaaaaaa aggcttaatt 6120

gattgaacca gattcgagaa aacagtgcta aattataatt ttctcaatac tgtaaatatt 6180

tttcaatctt cagcttcatt aacttctata attgaaatta tcccaattat tacctgacat 6240

gtactaaaat tccctaaaat ggatcttgag taacattttc acagtacgat aatttttctc 6300

tctgtatata tttatatagt cacatatatg cacatacatt atacaagcat tacttttcta 6360

taactgtaag gtcagaattt gaagttgtgt tttctttatc tttttatttc caatacttgg 6420

catcaagttg atattcatta gaagtaaagg aggaaggaaa tgaataatct tcagatacta 6480

agaacattac acttaaatta ttattaaatc taatttgcat tctcatatat ggcttagct 6539

<210> 2
<211> 338
<212> PRT
<213> Homo sapiens

<300>
<308> GenBank Accession No. U09116
<309> 1995-02-02
<313> (1)..(338)

<400> 2

Met Gly Lys Lys Gln Asn Arg Lys Thr Gly Asn Ser Lys Thr Gln Ser
1 5 10 15

Ala Ser Pro Pro Pro Lys Glu Arg Ser Ser Ser Pro Ala Thr Glu Gln
20 25 30

Ser Trp Met Glu Asn Asp Phe Asp Glu Leu Arg Glu Glu Gly Phe Arg
35 40 45

Arg Ser Asn Tyr Ser Glu Leu Arg Glu Asp Ile Gln Thr Lys Gly Lys
50 55 60

Glu Val Glu Asn Phe Glu Lys Asn Leu Glu Glu Cys Ile Thr Arg Ile
65 70 75 80

Thr Asn Thr Glu Lys Cys Leu Lys Glu Leu Met Glu Leu Lys Thr Lys
85 90 95

Ala Arg Glu Leu Arg Glu Glu Cys Arg Ser Leu Arg Ser Arg Cys Asp
100 105 110

Gln Leu Glu Glu Arg Val Ser Ala Met Glu Asp Glu Met Asn Glu Met
115 120 125

Lys Arg Glu Gly Lys Phe Arg Glu Lys Arg Ile Lys Arg Asn Glu Gln
130 135 140

Ser Leu Gln Glu Ile Trp Asp Tyr Val Lys Arg Pro Asn Leu Arg Leu
145 150 155 160

Ile Gly Val Pro Glu Ser Asp Val Glu Asn Gly Thr Lys Leu Glu Asn
165 170 175

Thr Leu Gln Asp Ile Ile Gln Glu Asn Phe Pro Asn Leu Ala Arg Gln
180 185 190

Ala Asn Val Gln Ile Gln Glu Ile Gln Arg Thr Pro Gln Arg Tyr Ser
195 200 205

Ser Arg Arg Ala Thr Pro Arg His Ile Ile Val Arg Phe Thr Lys Val
210 215 220

Glu Met Lys Glu Lys Met Leu Arg Ala Ala Arg Glu Lys Gly Arg Val
225 230 235 240

Thr Leu Lys Gly Lys Pro Ile Arg Leu Thr Ala Asp Leu Ser Ala Glu
245 250 255

Thr Leu Gln Ala Arg Arg Glu Trp Gly Pro Ile Phe Asn Ile Leu Lys
260 265 270

Glu Lys Asn Phe Gln Pro Arg Ile Ser Phe Pro Ala Lys Leu Ser Phe
275 280 285

Ile Ser Glu Gly Glu Arg Lys Tyr Phe Thr Asp Lys Gln Met Leu Arg
290 295 300

```
Asp Phe Val Thr Thr Arg Pro Thr Leu Lys Glu Leu Leu Lys Glu Ala
305                 310                 315                 320

Leu Asn Met Glu Arg Asn Asn Arg Tyr Gln Pro Leu Gln Asn His Ala
                325                 330                 335

Lys Met
```

<210> 3
<211> 1275
<212> PRT
<213> Homo sapiens

<300>
<308> GenBank Accession No. U09116
<309> 1995-02-02
<313> (1)..(1275)

<400> 3

```
Met Thr Gly Ser Asn Ser His Ile Thr Ile Leu Thr Leu Asn Ile Asn
1               5                   10                  15

Gly Leu Asn Ser Ala Ile Lys Arg His Arg Leu Ala Ser Trp Ile Lys
            20                  25                  30

Ser Gln Asp Pro Ser Val Cys Cys Ile Gln Glu Thr His Leu Met Cys
        35                  40                  45

Arg Asp Thr His Arg Leu Lys Ile Lys Gly Trp Arg Lys Ile Tyr Gln
    50                  55                  60

Ala Asn Gly Lys Gln Lys Lys Ala Gly Val Ala Ile Leu Val Ser Asp
65                  70                  75                  80

Lys Thr Asp Phe Lys Pro Thr Lys Ile Lys Arg Asp Lys Glu Gly His
                85                  90                  95
```

```
Tyr Ile Met Val Lys Gly Ser Ile Gln Gln Glu Glu Leu Thr Ile Leu
            100                 105                 110

Asn Ile Tyr Ala Pro Asn Thr Gly Ala Pro Arg Phe Ile Lys Gln Val
        115                 120                 125

Leu Ser Asp Leu Gln Arg Asp Leu Asp Ser His Thr Leu Ile Met Gly
    130                 135                 140

Asp Phe Asn Thr Pro Leu Ser Ile Leu Asp Arg Ser Thr Arg Gln Lys
145                 150                 155                 160

Val Asn Lys Asp Thr Gln Glu Leu Asn Ser Ala Leu His Gln Ala Asp
                165                 170                 175

Leu Ile Asp Ile Tyr Arg Thr Leu His Pro Lys Ser Thr Glu Tyr Thr
            180                 185                 190

Phe Phe Ser Ala Pro His His Thr Tyr Ser Lys Ile Asp His Ile Val
        195                 200                 205

Gly Ser Lys Ala Leu Leu Ser Lys Cys Lys Arg Thr Glu Ile Ile Thr
    210                 215                 220

Asn Tyr Leu Ser Asp His Ser Ala Ile Lys Leu Glu Leu Arg Ile Lys
225                 230                 235                 240

Asn Leu Thr Gln Ser Arg Ser Thr Thr Trp Lys Leu Asn Asn Leu Leu
                245                 250                 255

Leu Asn Asp Tyr Trp Val His Asn Glu Met Lys Ala Glu Ile Lys Met
            260                 265                 270

Phe Phe Glu Thr Asn Glu Asn Lys Asp Thr Thr Tyr Gln Asn Leu Trp
        275                 280                 285
```

Asp Ala Phe Lys Ala Val Cys Arg Gly Lys Phe Ile Ala Leu Asn Ala
290 295 300

Tyr Lys Arg Lys Gln Glu Arg Ser Lys Ile Asp Thr Leu Thr Ser Gln
305 310 315 320

Leu Lys Glu Leu Glu Lys Gln Glu Gln Thr His Ser Lys Ala Ser Arg
325 330 335

Arg Gln Glu Ile Thr Lys Ile Arg Ala Glu Leu Lys Glu Ile Glu Thr
340 345 350

Gln Lys Thr Leu Gln Lys Ile Asn Glu Ser Arg Ser Trp Phe Phe Glu
355 360 365

Arg Ile Asn Lys Ile Asp Arg Pro Leu Ala Arg Leu Ile Lys Lys Lys
370 375 380

Arg Glu Lys Asn Gln Ile Asp Thr Ile Lys Asn Asp Lys Gly Asp Ile
385 390 395 400

Thr Thr Asp Pro Thr Glu Ile Gln Thr Thr Ile Arg Glu Tyr Tyr Lys
405 410 415

His Leu Tyr Ala Asn Lys Leu Glu Asn Leu Glu Glu Met Asp Thr Phe
420 425 430

Leu Asp Thr Tyr Thr Leu Pro Arg Leu Lys Gln Glu Glu Val Glu Ser
435 440 445

Leu Asn Gly Pro Ile Thr Gly Ser Glu Ile Val Ala Ile Ile Asn Ser
450 455 460

Leu Pro Thr Lys Lys Ser Pro Gly Pro Asp Gly Phe Thr Ala Glu Phe
465 470 475 480

Tyr Gln Arg Tyr Lys Glu Glu Leu Val Pro Phe Leu Leu Lys Leu Phe
485 490 495

Gln Ser Ile Glu Lys Glu Gly Ile Leu Pro Asn Ser Phe Tyr Glu Ala
500 505 510

Ser Ile Ile Leu Ile Pro Lys Pro Gly Arg Asp Thr Thr Lys Lys Glu
515 520 525

Asn Phe Arg Pro Ile Ser Leu Met Asn Ile Asp Ala Lys Ile Leu Asn
530 535 540

Lys Ile Leu Ala Asn Arg Ile Gln Gln His Ile Lys Lys Leu Ile His
545 550 555 560

His Asp Gln Val Gly Phe Ile Pro Gly Met Gln Gly Trp Phe Asn Ile
565 570 575

Arg Lys Ser Ile Asn Val Ile Gln His Ile Asn Arg Ala Lys Asp Lys
580 585 590

Asn His Met Ile Ile Ser Ile Asp Ala Glu Lys Ala Phe Asp Lys Ile
595 600 605

Gln Gln Pro Phe Met Leu Lys Thr Leu Asn Lys Leu Gly Ile Asp Gly
610 615 620

Thr Tyr Phe Lys Ile Ile Arg Ala Ile Tyr Asp Lys Pro Thr Ala Asn
625 630 635 640

Ile Ile Leu Asn Gly Gln Lys Leu Glu Ala Phe Pro Leu Lys Thr Gly
645 650 655

Thr Arg Gln Gly Cys Pro Leu Ser Pro Leu Leu Phe Asn Ile Val Leu
660 665 670

```
Glu Val Leu Ala Arg Ala Ile Arg Gln Glu Lys Glu Ile Lys Gly Ile
        675                 680                 685

Gln Leu Gly Lys Glu Glu Val Lys Leu Ser Leu Phe Ala Asp Asp Met
    690                 695                 700

Ile Val Tyr Leu Glu Asn Pro Ile Val Ser Ala Gln Asn Leu Leu Lys
705                 710                 715                 720

Leu Ile Ser Asn Phe Ser Lys Val Ser Gly Tyr Lys Ile Asn Val Gln
                725                 730                 735

Lys Ser Gln Ala Phe Leu Tyr Thr Asn Asn Arg Gln Thr Glu Ser Gln
            740                 745                 750

Ile Met Gly Glu Leu Pro Phe Thr Ile Ala Ser Lys Arg Ile Lys Tyr
        755                 760                 765

Leu Gly Ile Gln Leu Thr Arg Asp Val Lys Asp Leu Phe Lys Glu Asn
    770                 775                 780

Tyr Lys Pro Leu Leu Lys Glu Ile Lys Glu Asp Thr Asn Lys Trp Lys
785                 790                 795                 800

Asn Ile Pro Cys Ser Trp Val Gly Arg Ile Asn Ile Val Lys Met Ala
                805                 810                 815

Ile Leu Pro Lys Val Ile Tyr Arg Phe Asn Ala Ile Pro Ile Lys Leu
            820                 825                 830

Pro Met Thr Phe Phe Thr Glu Leu Glu Lys Thr Thr Leu Lys Phe Ile
        835                 840                 845

Trp Asn Gln Lys Arg Ala Arg Ile Ala Lys Ser Ile Leu Ser Gln Lys
    850                 855                 860
```

```
Asn Lys Ala Gly Gly Ile Thr Leu Pro Tyr Phe Lys Leu Tyr Tyr Lys
865                 870                 875                 880

Ala Thr Val Thr Lys Thr Ala Trp Tyr Trp Tyr Gln Asn Arg Asp Ile
                885                 890                 895

Asp Gln Trp Asn Arg Thr Glu Pro Ser Glu Ile Met Pro His Ile Tyr
            900                 905                 910

Asn Tyr Leu Ile Phe Asp Lys Pro Glu Lys Asn Lys Gln Trp Gly Lys
        915                 920                 925

Asp Ser Leu Phe Asn Lys Trp Cys Trp Glu Asn Trp Leu Ala Ile Cys
    930                 935                 940

Arg Lys Leu Lys Leu Asp Leu Phe Leu Thr Pro Tyr Thr Lys Ile Asn
945                 950                 955                 960

Ser Arg Trp Ile Lys Asp Leu Asn Val Lys Pro Lys Thr Ile Lys Thr
                965                 970                 975

Leu Glu Glu Asn Leu Gly Ile Thr Ile Gln Asp Ile Gly Val Gly Lys
            980                 985                 990

Asp Phe Met Ser Lys Thr Pro Lys  Ala Met Ala Thr Lys  Asp Lys Ile
        995                 1000                1005

Asp Lys  Trp Asp Leu Ile Lys  Leu Lys Ser Phe Cys  Thr Ala Lys
    1010                1015                1020

Glu Thr  Thr Ile Arg Val Asn  Arg Gln Pro Thr Thr  Trp Glu Lys
    1025                1030                1035

Ile Phe  Ala Thr Tyr Ser Ser  Asp Lys Gly Leu Ile  Ser Arg Ile
    1040                1045                1050
```

Tyr Asn Glu Leu Lys Gln Ile Tyr Lys Lys Lys Thr Asn Asn Pro
1055 1060 1065

Ile Lys Lys Trp Ala Lys Asp Met Asn Arg His Phe Ser Lys Glu
1070 1075 1080

Asp Ile Tyr Ala Ala Lys Lys His Met Lys Lys Cys Ser Ser Ser
1085 1090 1095

Leu Ala Ile Arg Glu Met Gln Ile Lys Thr Thr Met Arg Tyr His
1100 1105 1110

Leu Thr Pro Val Arg Met Ala Ile Ile Lys Lys Ser Gly Asn Asn
1115 1120 1125

Arg Cys Trp Arg Gly Cys Gly Glu Ile Gly Thr Leu Leu His Cys
1130 1135 1140

Trp Trp Asp Cys Lys Leu Val Gln Pro Leu Trp Lys Ser Val Trp
1145 1150 1155

Arg Phe Leu Arg Asp Leu Glu Leu Glu Ile Pro Phe Asp Pro Ala
1160 1165 1170

Ile Pro Leu Leu Gly Ile Tyr Pro Glu Asp Tyr Lys Ser Cys Cys
1175 1180 1185

Tyr Lys Asp Thr Cys Thr Arg Met Phe Ile Ala Ala Leu Phe Thr
1190 1195 1200

Ile Ala Lys Thr Trp Asn Gln Pro Lys Cys Pro Thr Met Ile Asp
1205 1210 1215

Trp Ile Lys Lys Met Trp His Ile Tyr Thr Met Glu Tyr Tyr Ala
1220 1225 1230

Ala Ile Lys Asn Asp Glu Phe Ile Ser Phe Val Gly Thr Trp Met
1235 1240 1245

Lys Leu Glu Thr Ile Ile Leu Ser Lys Leu Ser Gln Glu Gln Lys
1250 1255 1260

Thr Lys His Arg Ile Phe Ser Leu Ile Gly Gly Asn
1265 1270 1275

<210> 4
<211> 830
<212> DNA
<213> Homo Sapiens

<400> 4
agttttttct taaatggtat aatatccagt atgaagtatt actgaatttg agtaatcatt 60

aacaaatata tttcactgcc atactgtata ccaggctttc ttctagggcc cagaaatata 120

agctggttaa gatccttgat tgattgagat tacattctaa caggtacagt agacttaata 180

gctaatatca gaaaagatta gcagatttat tcactgtgtt atttgtactt ttattctcca 240

ttttgccttac cctgtatttg aagaaagttt tgccttgctt tttgatgtga atgaaattaa 300

gcttggattt cacaaccgtg gttgaattta agaaatgttc tatttttaca tggggaagac 360

ggtgctcaag taatacttgc aggtactagc acccaggatt taggagtcca gtccagtttt 420

agctacacaa aagtcttaag tacacaaatt gccaatagag cagaactata taattcatag 480

atttgctcat tattaatctc aaggaaatca gctctttaaa tatatgtatt taatgaatgt 540

gaaatttttg ggaaggggaa ctactatgta ttaagccata atatttattt tacttaaaaa 600

atttttaaac aaagtaatac tagtcattgt gagaatgcta ttctaaaaaa aaaaaaagtc 660

ccctggccac cttctctttc catccctaga gaccgaacat tttcaaaatt tgtagctact 720

tcttctactt agcctccatg tattaaacta atatgtgtaa taagaataat ccgggggagg 780

agccaagatg gccgaatagg aacagctccg gtctacagct cccagcgtga 830

<210> 5

<211> 1103
<212> DNA
<213> Homo sapiens

<400> 5
gggaggagcc aagatggccg aataggaaca gctccggtct acagctccca gcgtgagcga 60

cgcagaagac gggtgatttc tgcatttcca tctgaggtac cgggttcatc tcactaggga 120

gtgccagaca gtgggcgcag gccagtgtgt gtgcgcaccg tgcgcgagcc gaagcagggc 180

gaggcattgc ctcacctggg aagcgcaagg ggtcagggag ttccctttcc gagtcaaaga 240

aaggggtgac ggacgcacct ggaaaatcgg gtcactccca cccgaatatt gcgcttttca 300

gaccggctta agaaacggcg caccacgaga ctatatccca cacctggctc agagggtcct 360

acgcccacgg aatctcgctg attgctagca cagcagtctg agatcaaacg gcaaggcggc 420

aacgaggctg ggggaggggc gcccgccatt gcccaggctt gcttaggcaa acaaagcagc 480

tgggaagctc gaactgggtg gagcccacca cagctcaagg aggcctgcct gcctctgtag 540

gctccacctc tgggggcagg gcacagacaa acaaaaagac agcagtaacc tctgcagact 600

taagtgtccc tgtctgacag ctttgaagag agcagtggtt ctcccagcac gcagctggag 660

atctgagaac gggcagactg cctcctcaag tgggtccctg acccctgacc cccgagcagc 720

cttaactggga ggcacccccc agcagggcac actgacacct cacacagcag ggtattccaa 780

cagacctgca gctgagggtc ctgtctgtta gaaggaaaac taacaaccag aaaggacatc 840

tacaccgaaa acccatctgt acatcaccat catcaaagac caaaagtaga taaaaccaca 900

aagatgggga aaaaacagaa cagaaaaact ggaaactcta aaacgcagag cgcctctcct 960

cctccaaagg aacgcagttc ctcaccagca acagaacaaa gctggatgga gaatgatttt 1020

gacgagctga gagaagaagg cttcagacga tcaaattact ctgagctacg ggaggacatt 1080

caaaccaaag gcaaagaagt tga 1103

<210> 6
<211> 1104
<212> DNA
<213> Homo sapiens

<400> 6
gggaggagcc aagatggccg aataggaaca gctccggtct acagctccca gcgtgagcga 60

cgcagaagac gggtgatttc tgcatttcca tctgaggtac cgggttcatc tcactaggga 120

gtgccagaca gtgggcgcag gccagtgtgt gtgcgcaccg tgcgcgagcc gaagcagggc 180

gaggcattgc ctcacctggg aagcgcaagg ggtcagggag ttccctttc gagtcaaaga 240

aaggggtgac ggacgcacct ggaaaatcgg gtcactccca cccgaatatt gcgcttttca 300

gaccggctta agaaacggcg caccacgaga ctatatccca cacctggctc agagggtcct 360

acgcccacgg aatctcgctg attgctagca cagcagtctg agatcaaacg gcaaggcggc 420

aacgaggctg ggggaggggc gcccgccatt gcccaggctt gcttaggcaa acaaagcagc 480

tgggaagctc gaactgggtg gagcccacca cagctcaagg aggcctgcct gcctctgtag 540

gctccacctc tgggggcagg gcacagacaa acaaaaagac agcagtaacc tctgcagact 600

taagtgtccc tgtctgacag ctttgaagag agcagtggtt ctcccagcac gcagctggag 660

atctgagaac gggcagactg cctcctcaag tgggtccctg acccctgacc cccgagcagc 720

ctaactggga ggcacccccc agcaggggca cactgacacc tcacacagca gggtattcca 780

acagacctgc agctgagggt cctgtctgtt agaaggaaaa ctaacaacca gaaaggacat 840

ctacaccgaa aacccatctg tacatcacca tcatcaaaga ccaaaagtag ataaaaccac 900

aaagatgggg aaaaaacaga acagaaaaac tggaaactct aaaacgcaga gcgcctctcc 960

tcctccaaag gaacgcagtt cctcaccagc aacagaacaa agctggatgg agaatgattt 1020

tgacgagctg agagaagaag gcttcagacg atcaaattac tctgagctac gggaggacat 1080

tcaaaccaaa ggcaaagaag ttga 1104

<210> 7
<211> 600
<212> DNA
<213> Homo Sapiens

<400> 7
ctcgctctcc acgggttgga cccactgcct aaccatttcc agtgagatga actggttacc 60

tcagttggag atacagaaat caccagcctt ctgagttggt ctcgctggga gctgcagacc 120

agagctgttc ctatttagcc atcttggccc ctccccccctt gaaaattcca tttctttaat 180

agatataggg ctattgaggc tatttctcct taaatgaacc tagatagttt gtgtgcagct 240

gtcaaggaat ttgtccattt tatctaagtt gtcatattta tctatataaa gtttttcata 300

atattcgttt attatctatt taccgtctat agcagtactg atggcttttg aatactagca 360

cggctaattg caaatctata gtcatgtcac ctgtctcatt cctaagattt aaaaatgcac 420

tgcaggacac aaagttattc cacacacctc gacttagctt atttgtgtat ttcttccaag 480

agaaaaaaaa aaaagaggcc aggcatggtg gctcacgcct gtaatcccag cactttggga 540

ggctgaggca ggtggatcac tttaggtcag gagtttgaga tcagcctggc caacatggcg 600

<210> 8
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 8
ctgccatact gtataccagg 20

<210> 9
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 9
ctgttcctat tcggccatct 20

<210> 10
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 10
ctagggccca gaaatataag 20

<210> 11
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 11
cccggatta ttcttattac 20

<210> 12
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 12
ggttacct cagttggaga 20

<210> 13
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 13
atgttggcca ggctgatctc 20

<210> 14
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 14
agccttctga gttggtctcg 20

<210> 15
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 15
agtgatccac ctgcctcagc 20